# Mitigating risk of introduction and spread of marine INNS through risk assessments and biosecurity planning

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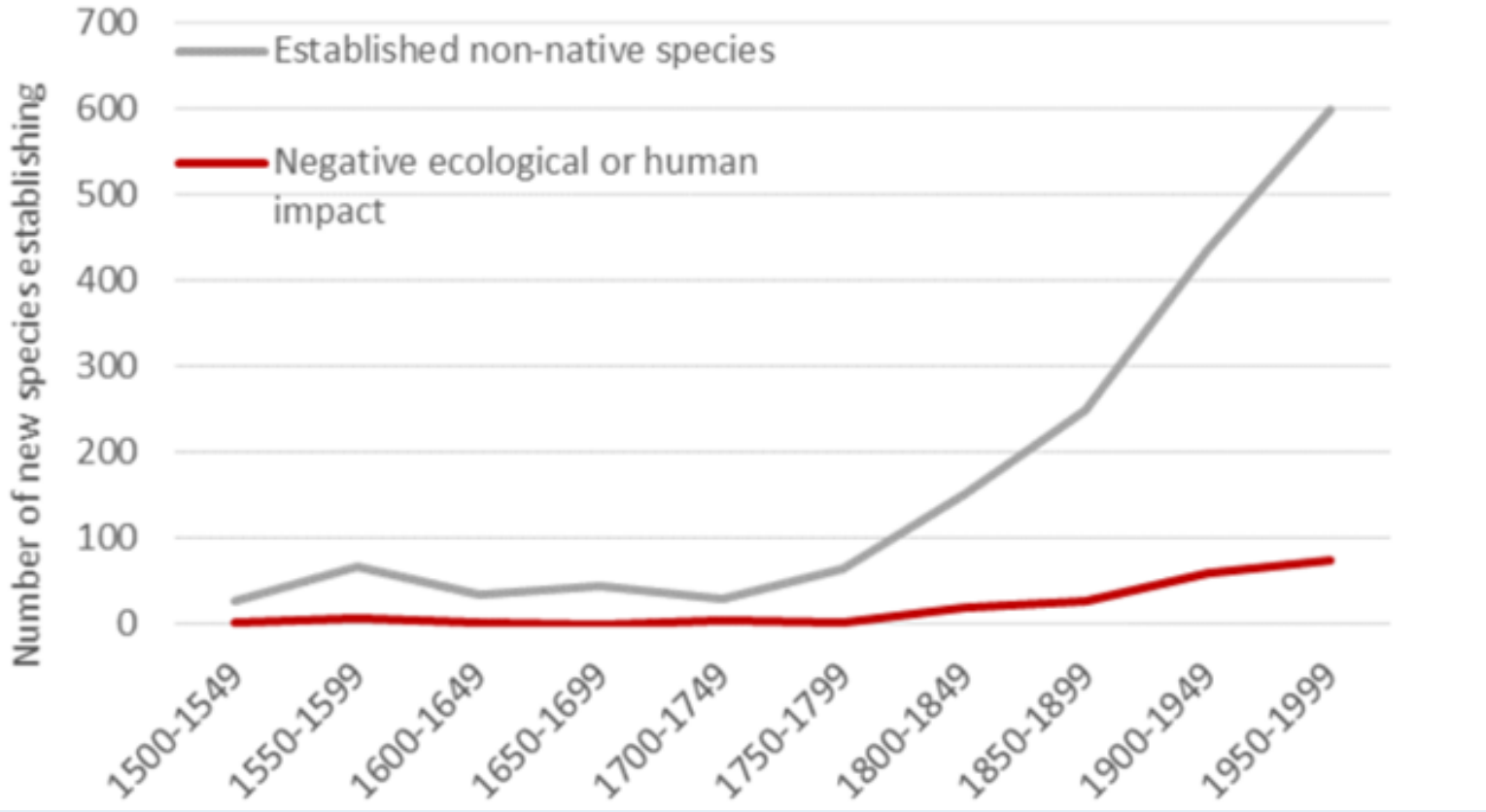
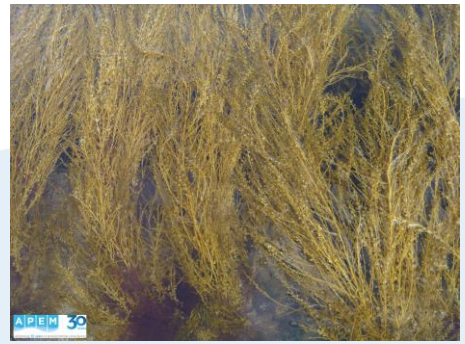
apemltd.com

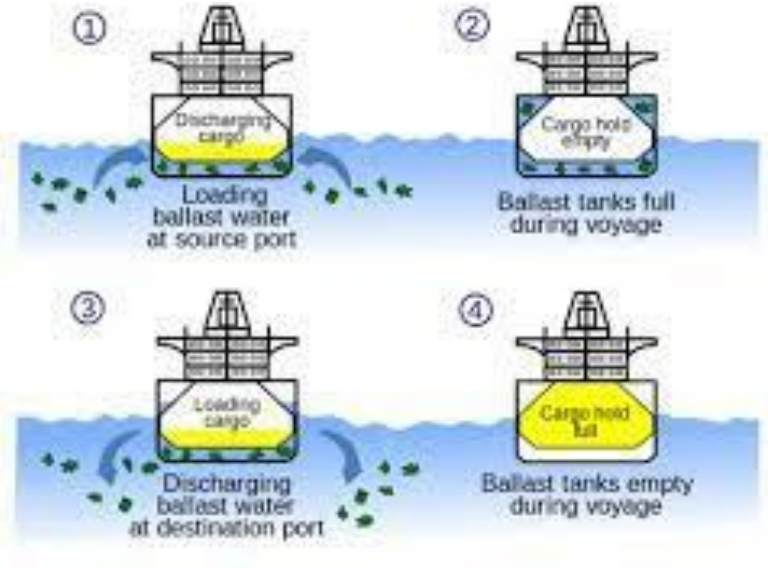
# Impacts of INNS


# Marine Invasive and Non-Native Species (INNS)

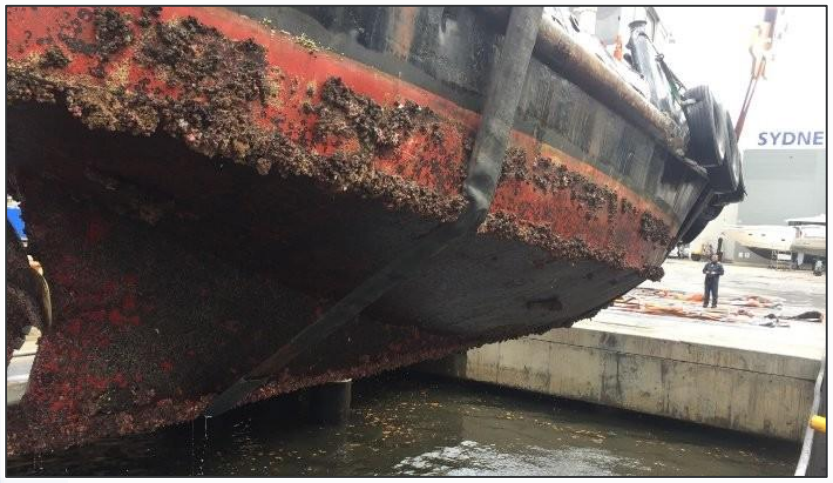


# Introduction and spread via pathways








# How

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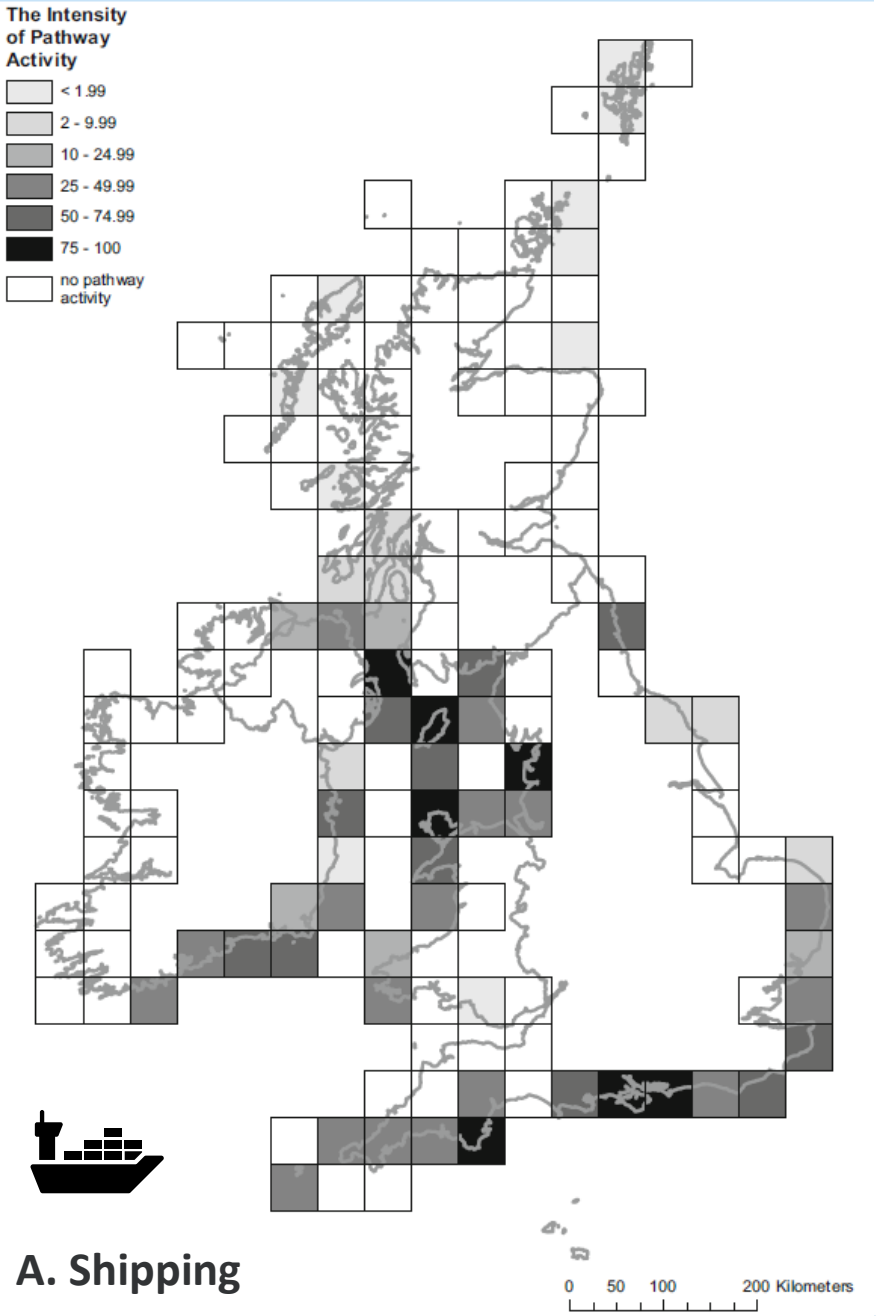
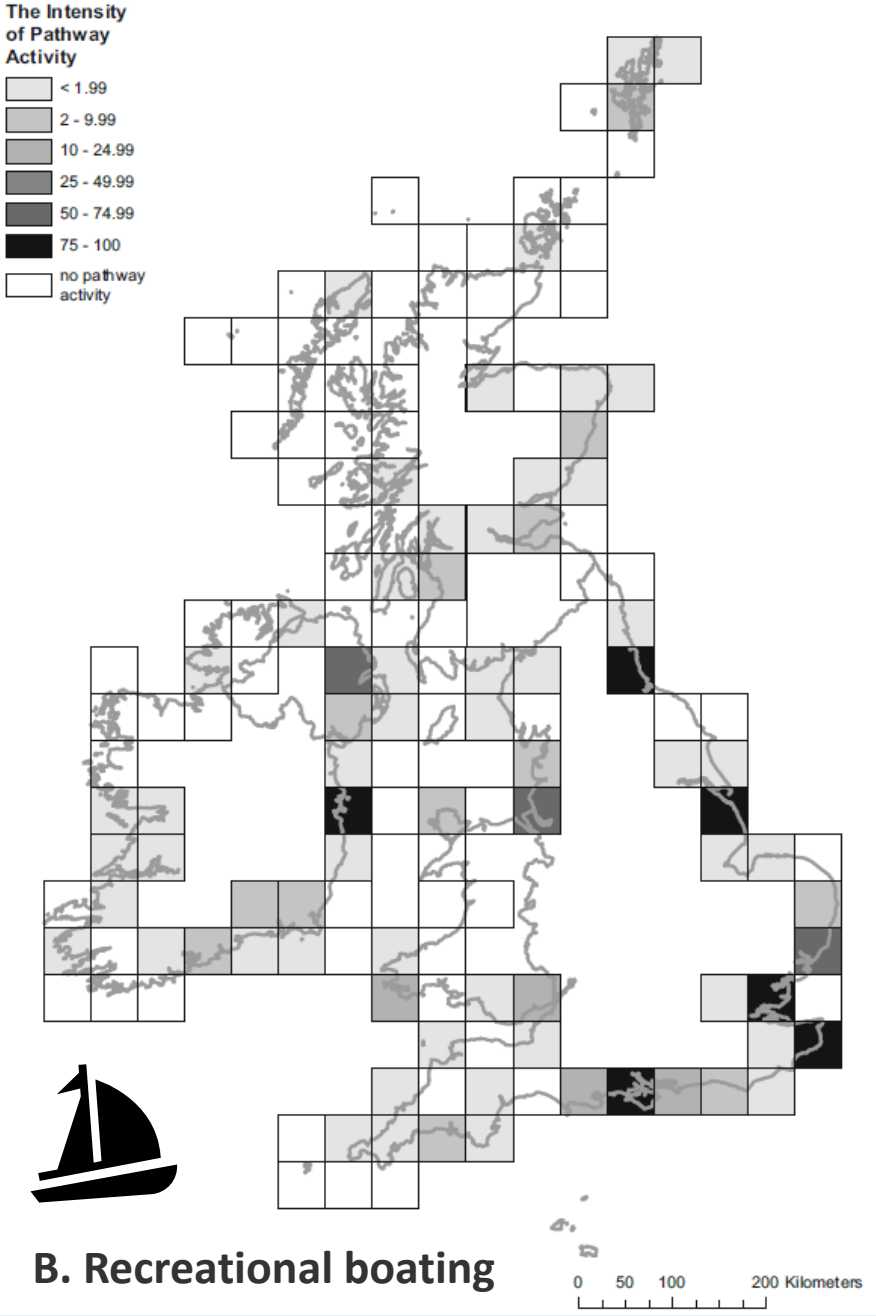



A. Shipping



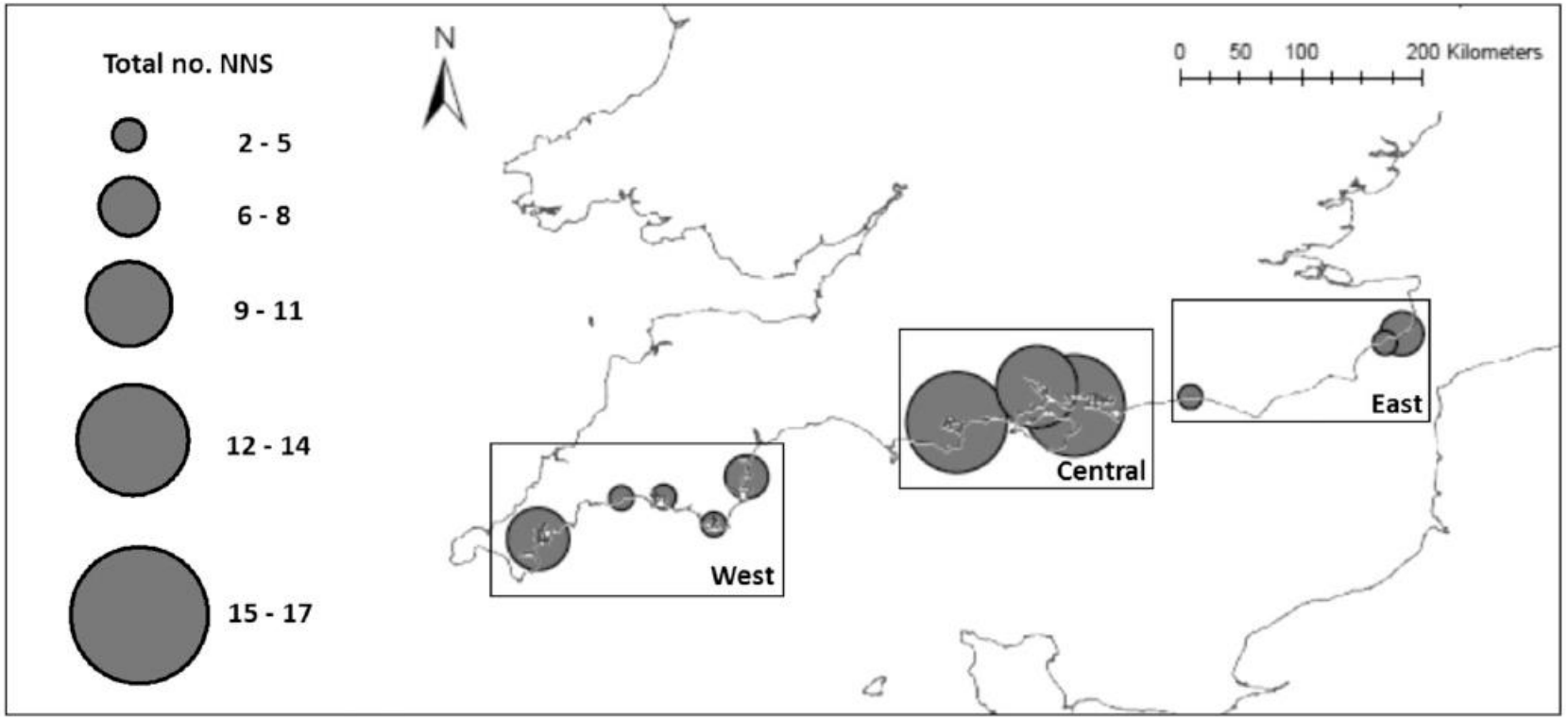

B. Recreational boating

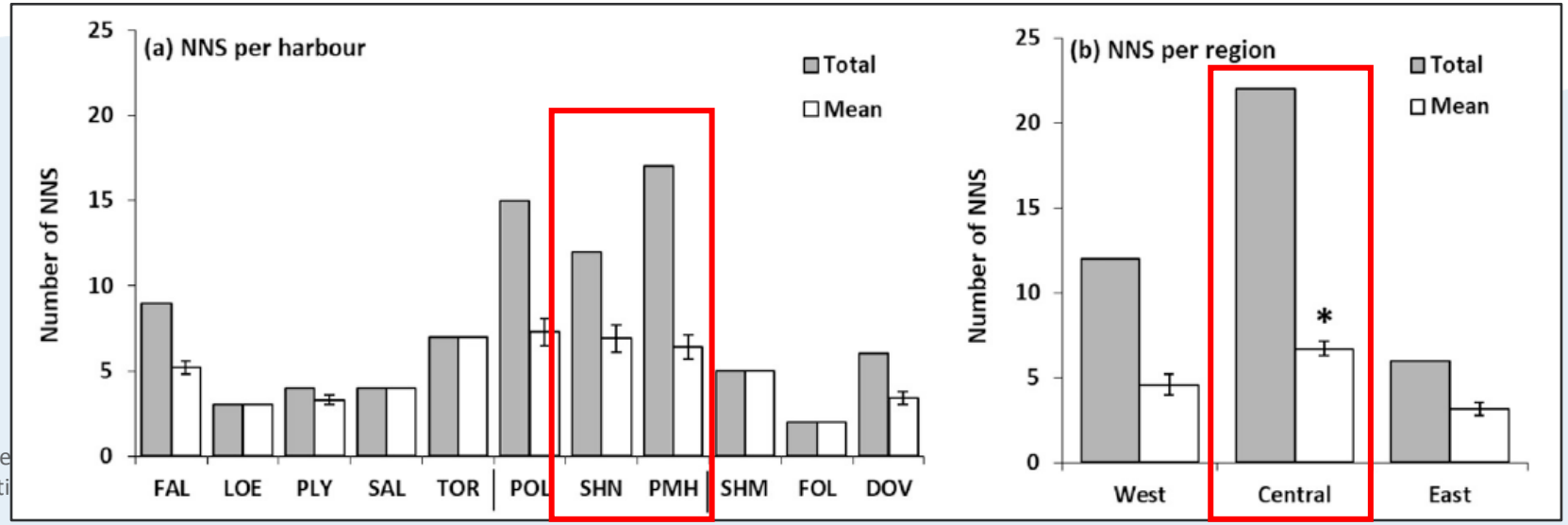
O'Shaughnessy e
1;154:111082.
Tidbury et al. (20
www.marinetraf

# How does this relate to The Solent?

O'Shaughnessy et al. (2020) Occurrence and assemblage composition of intertidal non-native species may be influenced by shipping patterns and artificial structures. *MPB*. 1;154:111082.

# How c



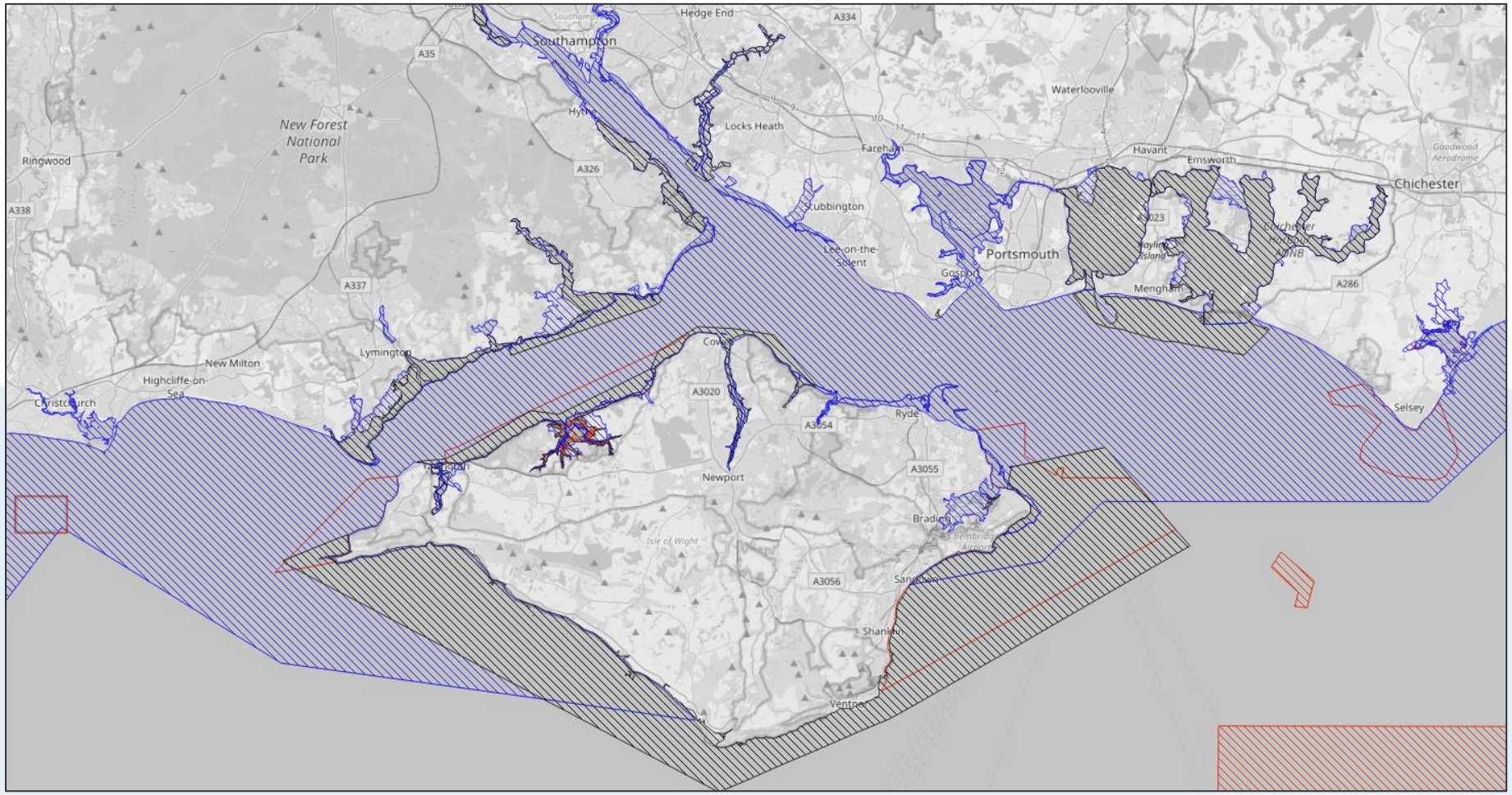




O'Shaughnessy e
patterns and arti

# How does this relate to The Solent?

## Natural surrounding areas / Protected areas / Designated sites

- MCZs
- SACs
- SPAs
- Offshore MPAs



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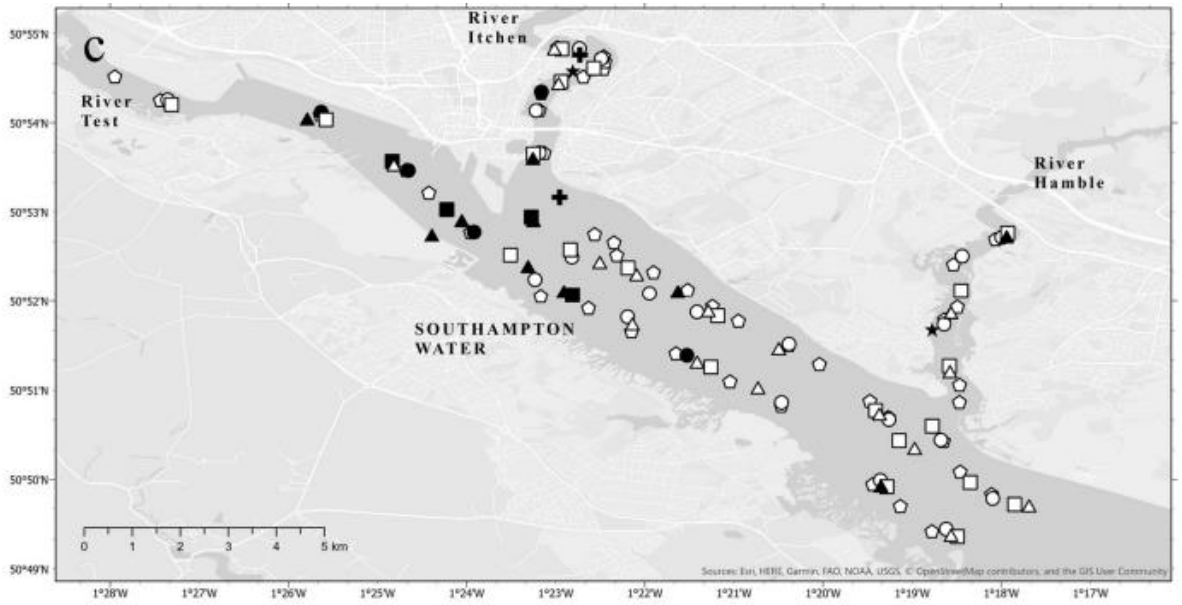






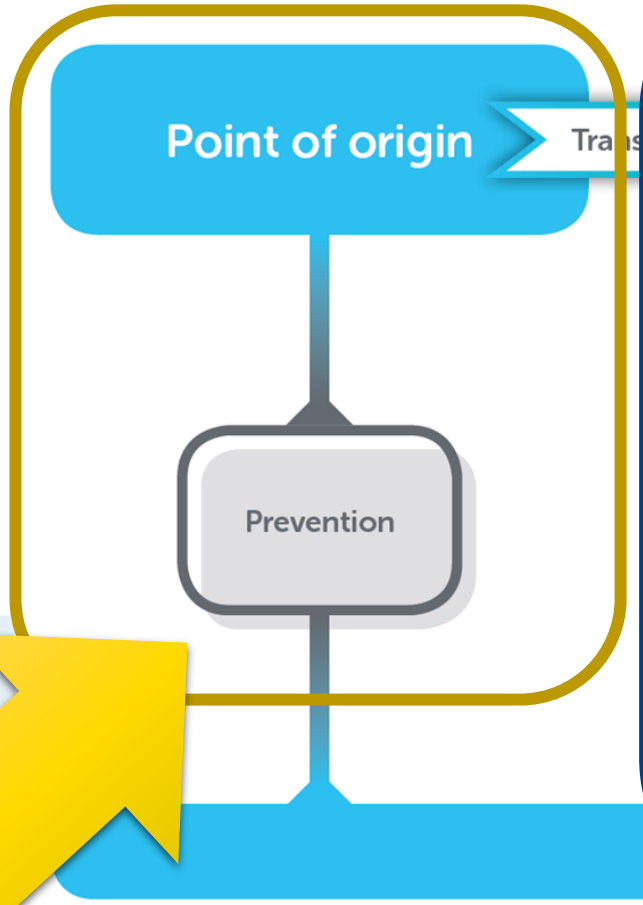



Watson et al. (2021) Evidence for self-sustaining populations of *Arcuatula senhousia* in the UK and a review of this species' potential impacts within Europe. *Scientific Reports*, 11(1), pp.1-13.

# How do we minimise introduction and spread?

## Hierarchy of management

- Prevention
- Rapid response & eradication
- Containment & long term control



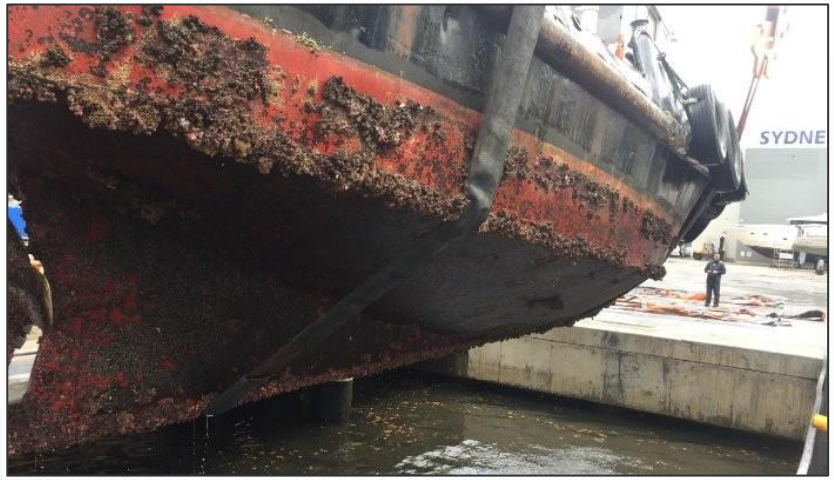

**Risk Assessments**

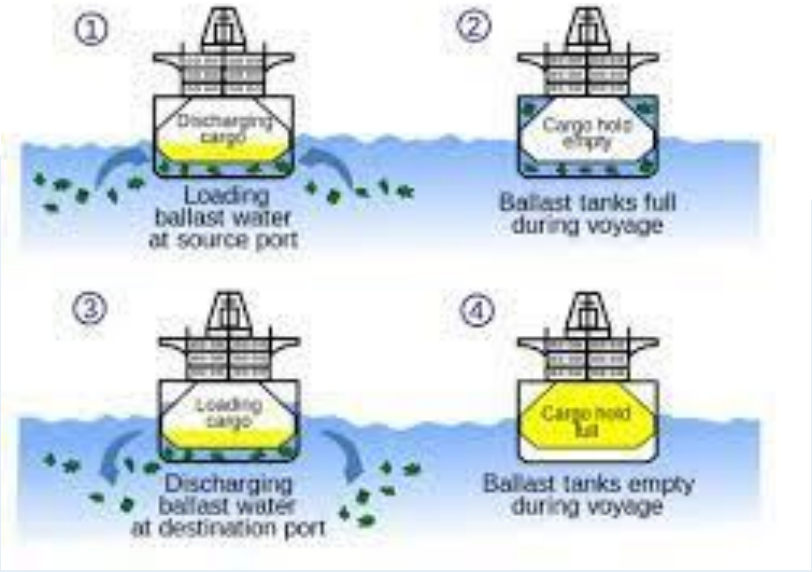
**&**

**Biosecurity Planning**

# Pathway risk assessment

- Cover a single specific pathway
- Species-specific risk assessment for that pathway
- Environmental similarity risk assessment



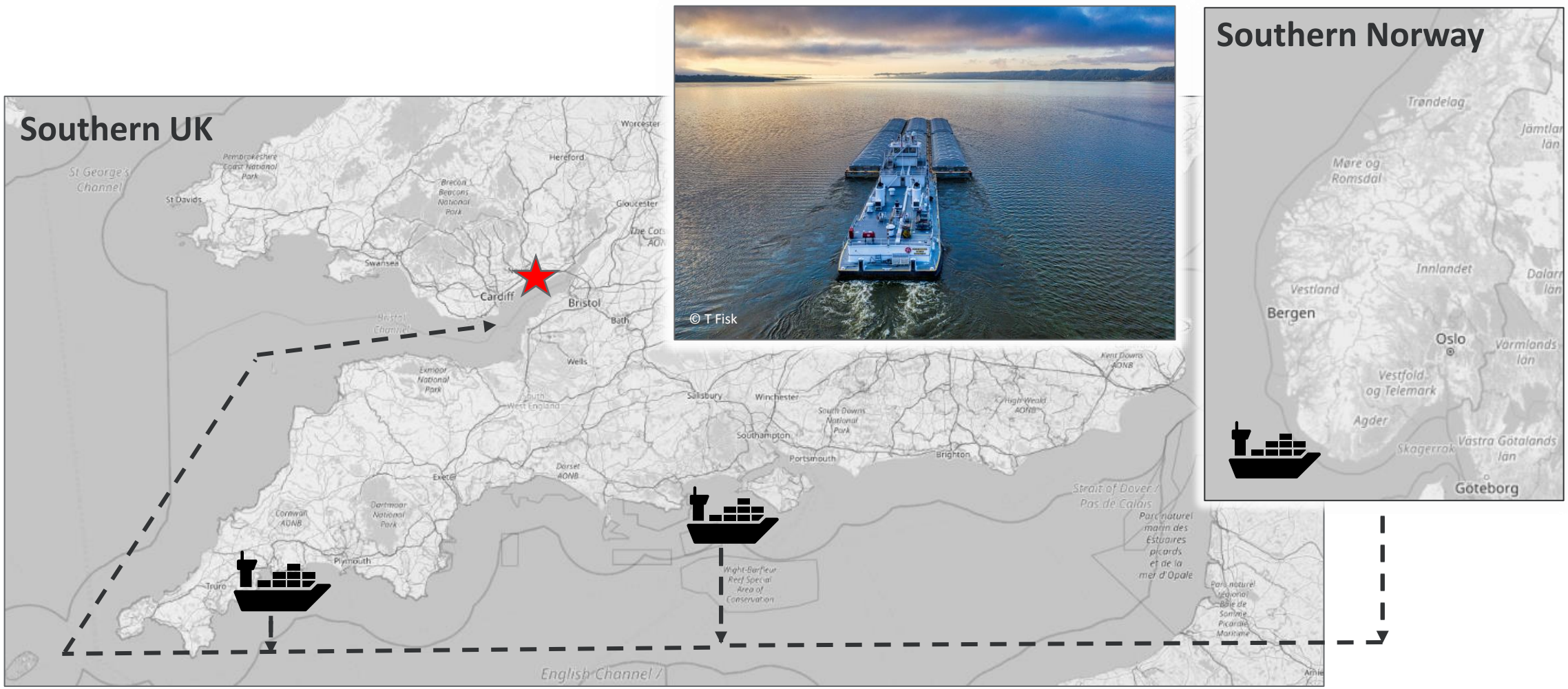

# Asset and operations risk assessments

**Assets = specific location / area / infrastructure**

**Operations = specific event / temporary event**

- All relevant pathways identified
- Frequency and intensity of pathways scored
- All INNS at site identified & impacts assessed
- ‘Horizon’ species identified
- Comparative and repeatable so can determine hotspots if applied to multiple sites

# Operations risk assessment



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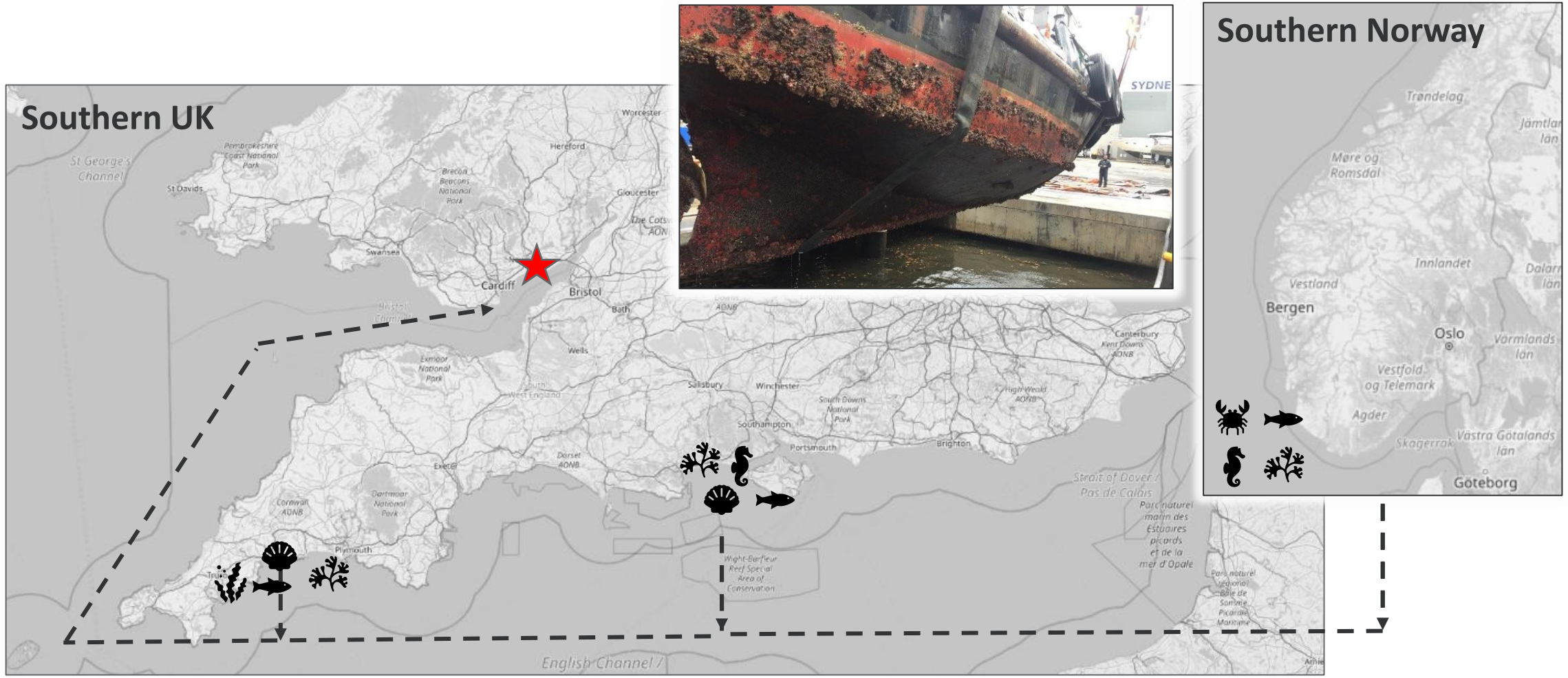
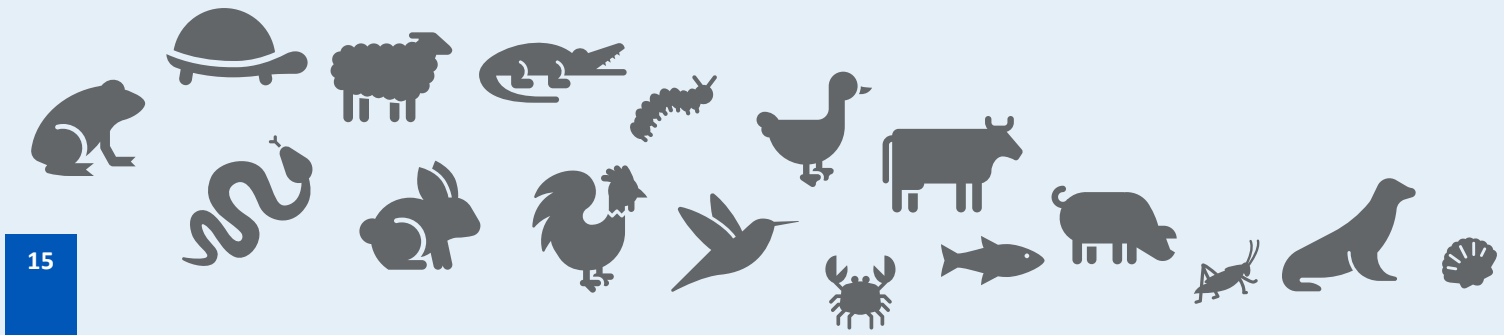


# Species risk assessment – Horizon scanning

- What's next?
- Consensus method using technical experts
- Initial ranking by scoring
- i) arrival, ii) establishment, iii) magnitude of the potential negative impact on biodiversity or ecosystems, human health or economies
- Discussion and review to meet consensus



# Species risk assessment – Horizon scanning

- Is this species a risk?
- Entry, establishment, spread, impact, climate change

| Statistics | Scores |
|---|---|
| **BRA** | **13.0** |
| **BRA Outcome** | **High** |
| **BRA+CCA** | **13.0** |
| **BRA+CCA Outcome** | **High** |
| **Score partition** | |
| **A. Biogeography/Historical** | **1.0** |
| *1. Domestication/Cultivation* | *0.0* |
| *2. Climate, distribution and introduction risk* | *1.0* |
| *3. Invasive elsewhere* | *0.0* |
| **B. Biology/Ecology** | **12.0** |
| *4. Undesirable (or persistence) traits* | *8.0* |
| *5. Resource exploitation* | *0.0* |
| *6. Reproduction* | *0.0* |
| *7. Dispersal mechanisms* | *4.0* |
| *8. Tolerance attributes* | *0.0* |
| **C. Climate change** | **0.0** |
| *9. Climate change* | *0.0* |
| **Answered Questions** | |
| ***Total*** | ***55*** |
| **A. Biogeography/Historical** | **13** |
| *1. Domestication/Cultivation* | *3* |
| *2. Climate, distribution and introduction risk* | *5* |
| *3. Invasive elsewhere* | *5* |
| **B. Biology/Ecology** | **36** |
| *4. Undesirable (or persistence) traits* | *12* |
| *5. Resource exploitation* | *2* |
| *6. Reproduction* | *7* |
| *7. Dispersal mechanisms* | *9* |
| *8. Tolerance attributes* | *6* |
| **C. Climate change** | **6** |
| *9. Climate change* | *6* |
| **Sectors affected** | |
| **Commercial** | **4** |
| **Environmental** | **2** |
| **Species or population nuisance traits** | **11** |

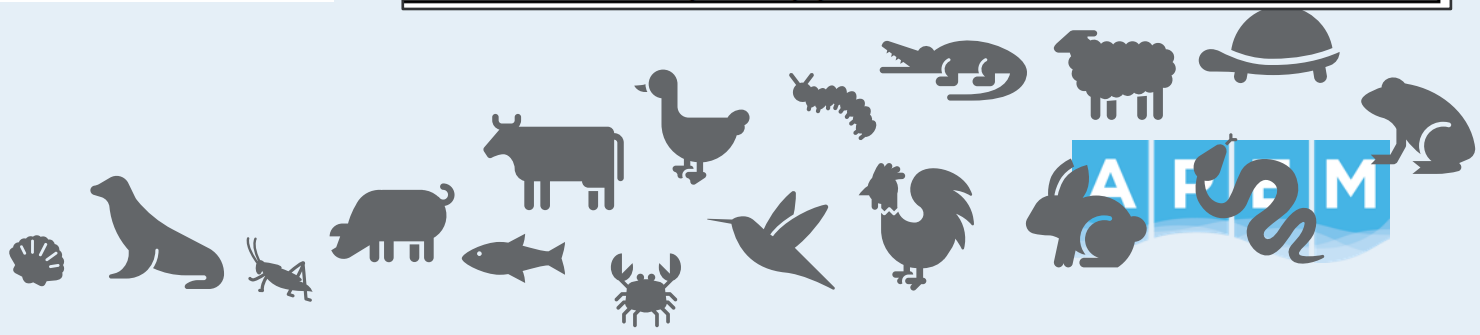
Entry

Estimate the overall likelihood of entry into the risk assessment area for this organism (comment on key issues that lead to this conclusion).

**[Delete accordingly]**

**Response:** *very unlikely | unlikely | moderately likely | likely | very likely*
**Confidence:** *very low | low | medium | high | very high*

**Comments (include list of entry pathways in your comments):**



# Biosecurity Planning

- "An ounce of **prevention** is worth a pound of cure"
- Identifies **realistic**, **pragmatic** and (ideally) cost-effective procedures and behaviours that reduce the risk of INNS introduction and establishment
- Highly specific to the characteristics and **activities at the site**, but there are general measures that will likely apply across all sites

# Biosecurity Planning

## Minimum requirements:

- an **introduction** setting out purpose aims and objectives
- a section identifying the **risks** that the biosecurity plan will cover
- the **biosecurity measures** by which the risks will be addressed
- how the plan will be **implemented**
- **contingency** plan for new INNS
- a **review** process

# Biosecurity Measures

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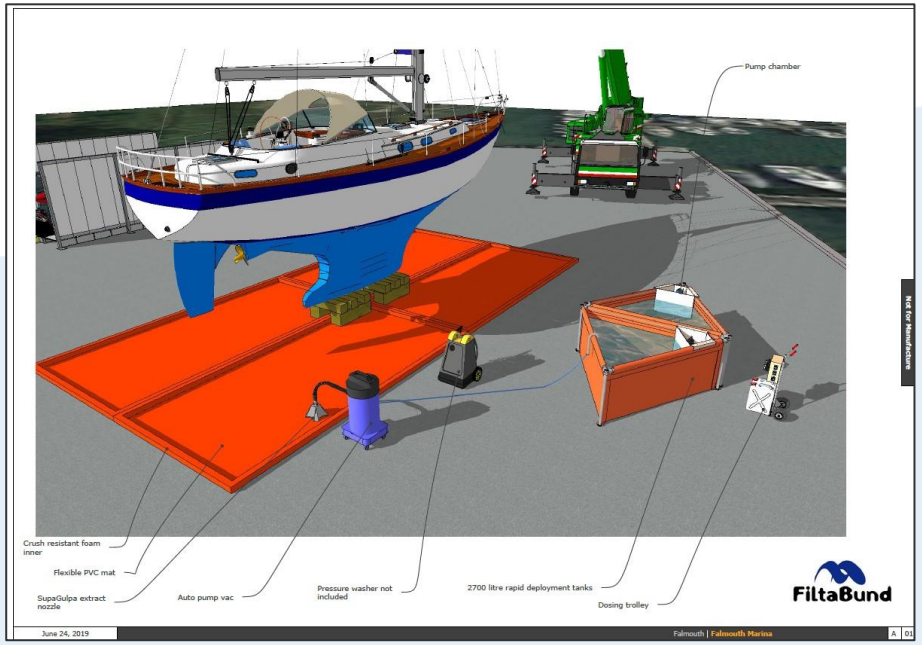
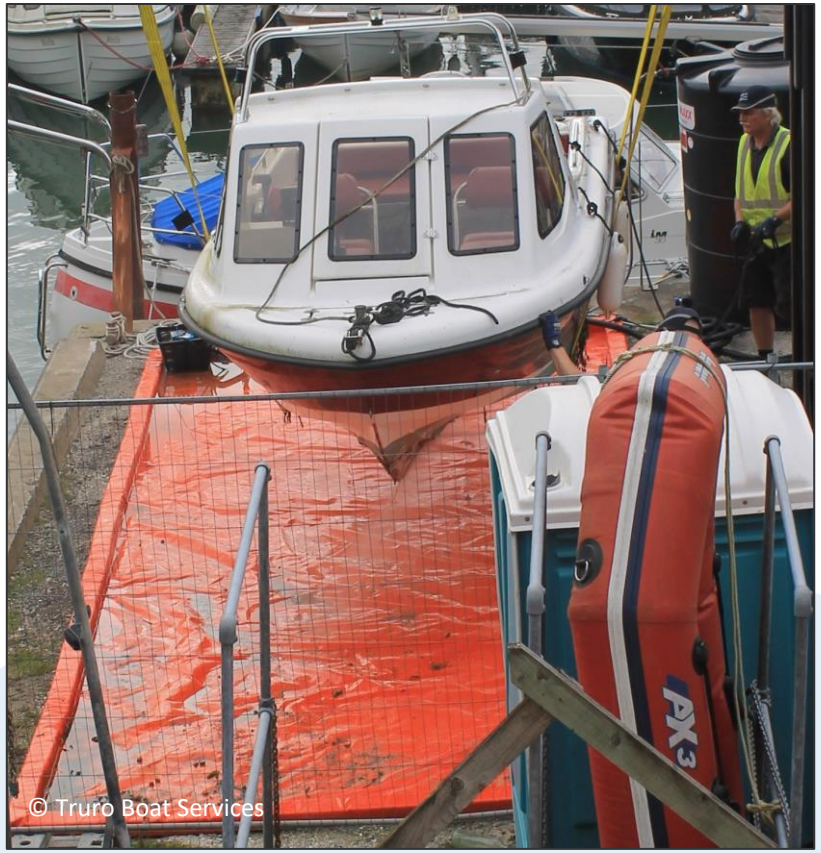
- Raise public awareness, *e.g. Check Clean Dry campaign*
- INNS ID and monitoring training
- Biosecurity measures during events, *e.g. Participants of events to arrive with clean equipment*
- Biosecurity Manager
- Washdown and waste capture facilities
- New and developing technologies for continual biosecurity

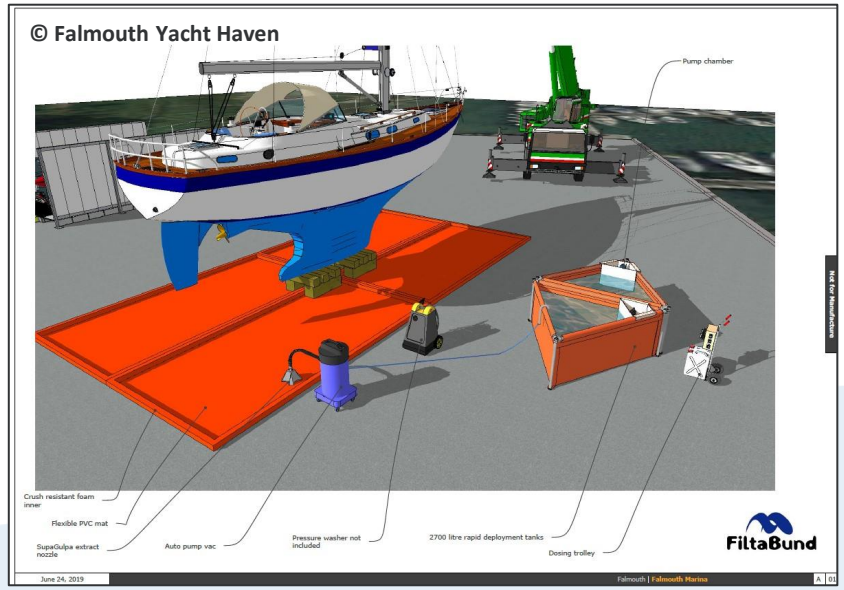
©British Canoeing



# New and developing technologies





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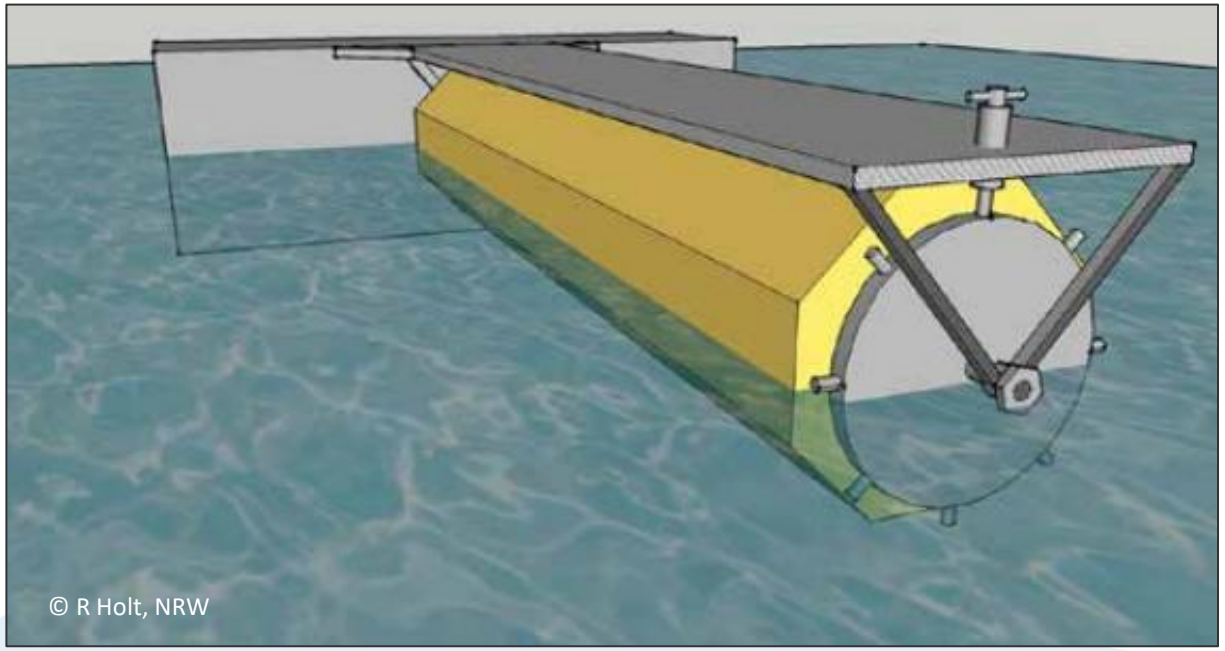


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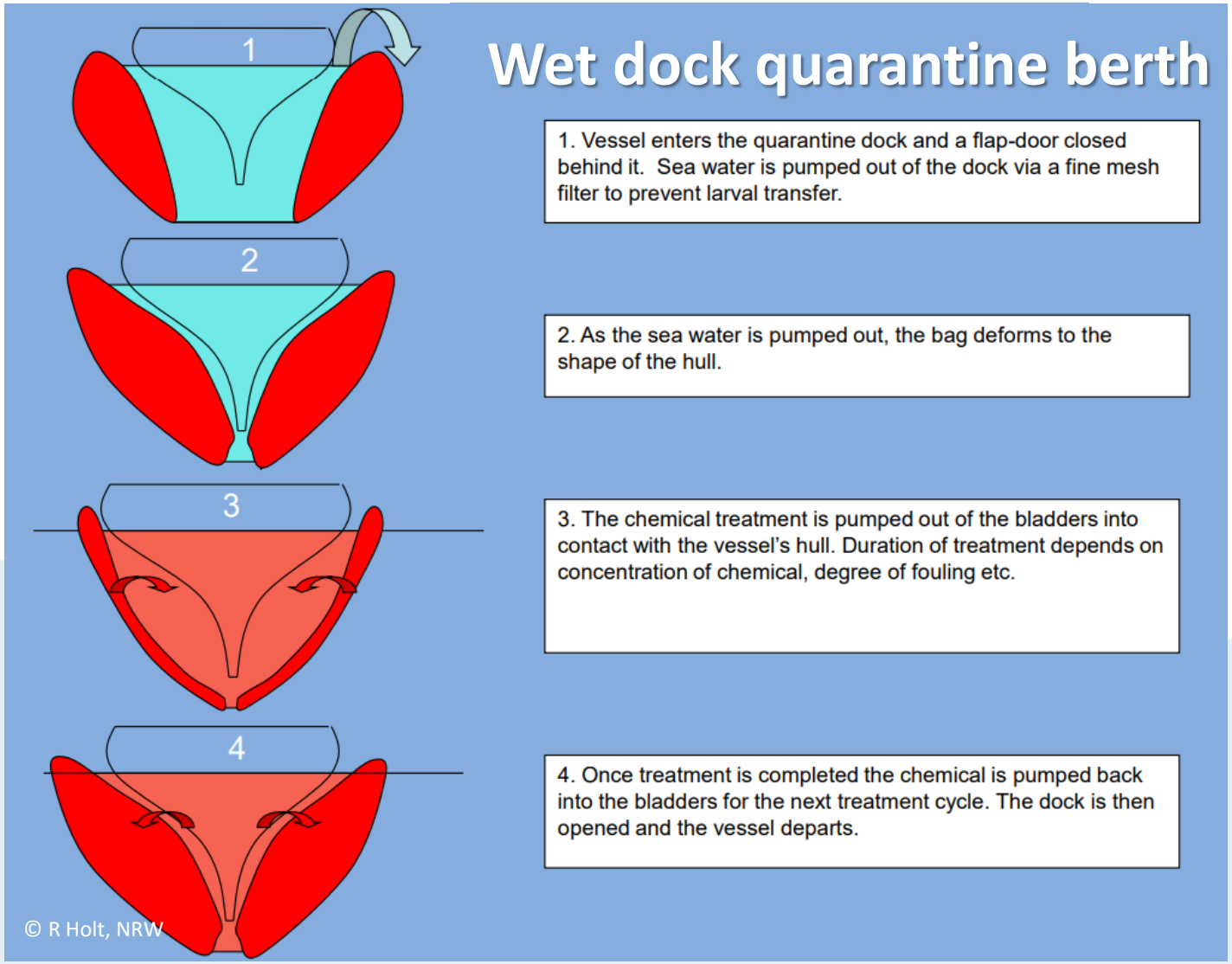


# Realistic low-cost biosecurity options

Whene

CHE

CLE

DR


www.nonnativespecies.org


Check Clean Dry for dinghy sailors


Check Clean Dry for windsurfers

# Realistic low-cost biosecurity options

- Stakeholder engagement: INNS ID and survey training & workshops



# Realistic low-cost biosecurity options

- Species data: Baseline surveys & continual monitoring

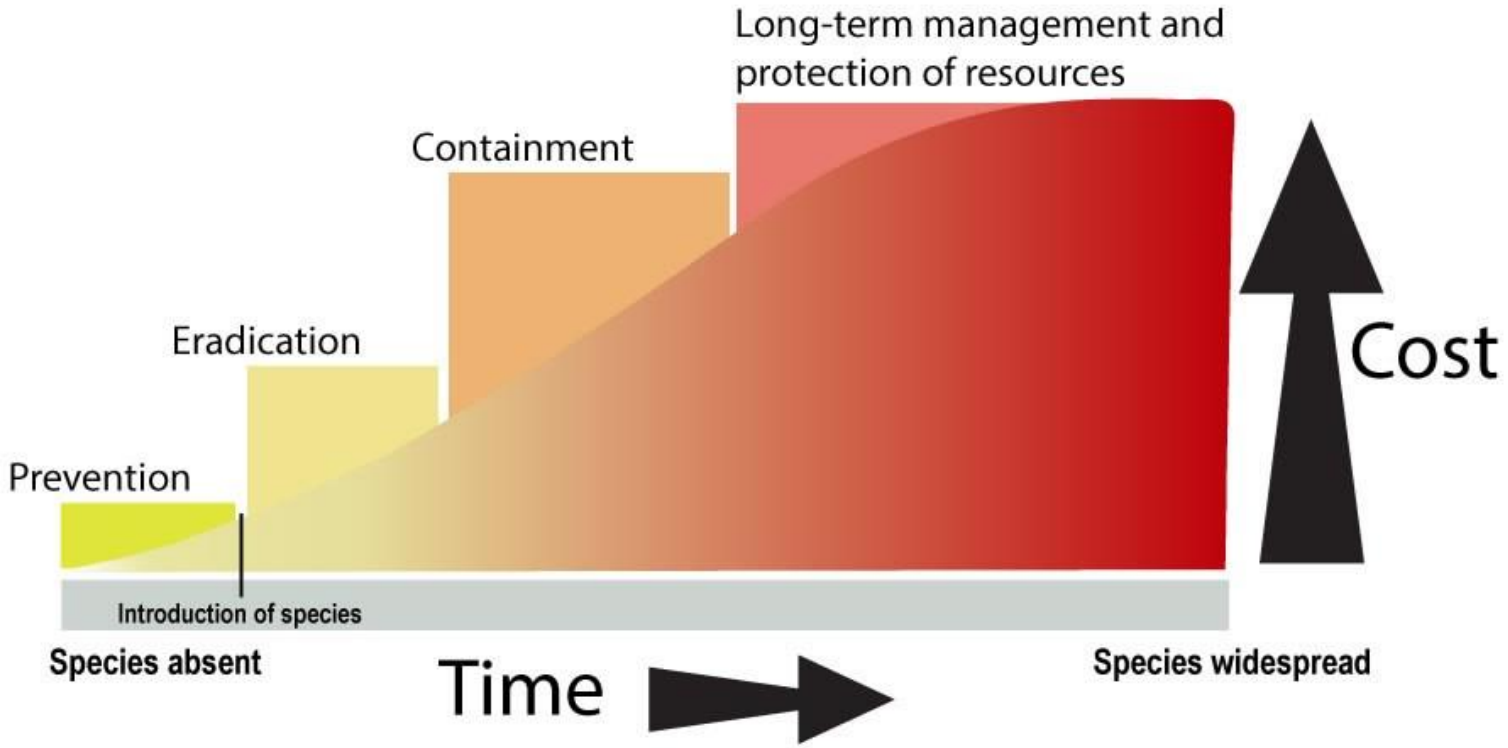
# Contingency

## Early detection

- Identify pathways
- High-risk and horizon species monitoring
- Hot spots

## Rapid response

- New incursion
- Urgent action
- Eradicate, control, contain, long-term management



# Early Detection and Rapid Response

## Carpet sea squirt in Holyhead Marina (Wales)


# Biosecurity Plans

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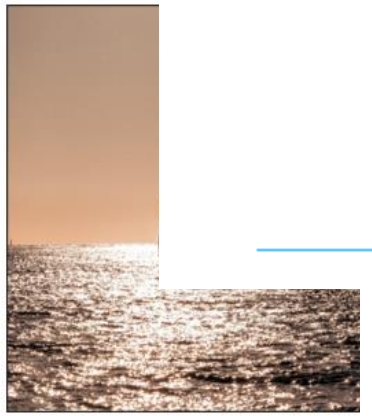
Recreati



September 2022

NATURAL ENGLAND APEM Biological Association

Marine Invasive Non-Native Species

MARINE BIOSECURITY PLANNING

Guidance for Estuary Wide Plan Development

NATURAL ENGLAND

Marine Pathways

Managing marine non-native species

C2W Marine Matters Managed www.c2w.org.uk


MARINE BIOSECURITY PLAN

Tamar Estuaries

18 - 2020

ne A. Wood, Anna L.E. Yunnie, Tom Vance, Sarah Brown

April 2018

NATURAL ENGLAND

TAMAR ESTUARIES CONSULTATIVE FORUM OUR COMMON ASSET

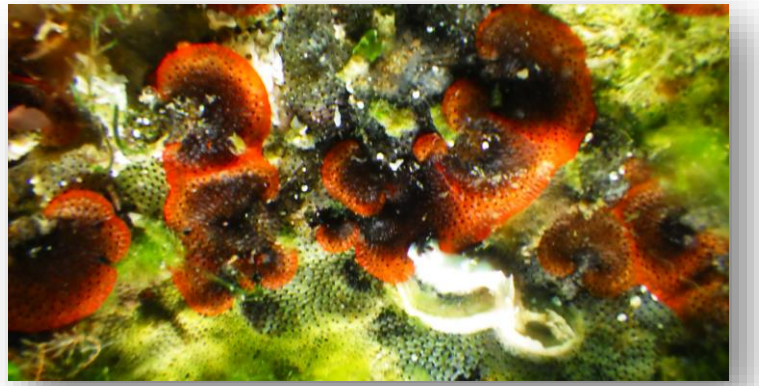
PML Applications Ltd

THE MARINE BIOLOGICAL ASSOCIATION

C2W Marine Matters Managed www.c2w.org.uk

APEM

# Thank you

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